LABORATORY PRECAUTIONS: No. 2.

"Aluminium Formate."—In an attempt to prepare "aluminium formate," the calculated quantities of solutions of aluminium sulphate and calcium formate were mixed, the bulk of the calcium sulphate filtered off and the solution concentrated to a thin syrup by evaporation. The remainder of the calcium sulphate was thrown down by a slight excess of barium formate solution. The solution was again filtered and the barium content estimated.

This was precipitated with the calculated amount of dilute sulphuric acid. The filtered solution contained only "aluminium formate." This solution was placed in an evaporating basin, heated by means of a micro-burner encased in a Uralite tube; a wire gauze was between the burner and the base of the evaporating basin which was, in effect, heated by hot air.

After the basin had been heated for 15 minutes, a white crust formed on the surface of the solution. When this was stirred with a glass rod a detonation occurred with a flash of blue flame. Only a slight residue was left in the dish, the greater part of the contents being scattered some 10 feet around the point of explosion. Owing to the arrangement of the burner, it seems unlikely that there was any local overheating; the "formate" apparently exploded on contact with the rod.—*Abridged from A.B.C.M. Quarterly Safety Summary*, 1939, **10** (37), 1.

Bromine and Phosphorus.—Although attention is directed in the older textbooks to the possibility of explosion during the addition of bromine to red phosphorus and water for the preparation of hydrogen bromide, many of the more modern works do not include such a warning. When ordinary commercial grade red phosphorus was being used a violent explosion took place immediately after the addition of the first drop of bromine. As the reaction was being carried out in the fume cupboard and the operator wore spectacles, only slight facial cuts resulted from flying glass splinters. Fortunately, the bromine did not splash because the separating funnel was clamped separately from the flask containing the phosphorus. Thereafter hydrogen bromide was prepared by the addition of bromine to boiling tetralin, and this method would seem preferable unless stringent precautions are taken against a possible explosion.

Carbon Disulphide.—Particulars have been received of an explosion which occurred in a sewer on the premises of an examination hall, in 1932, which resulted in much material damage and injury to two students. The cause of the accident has since been ascertained. It appears that a Winchester quart of waste carbon

disulphide was poured down a drain, with repeated flushings with water. This method of disposing of accumulated waste carbon disulphide had been customary for some months as complaints of odour had been made as the result of pouring the waste on to land at the back of the building. Carbon disulphide is a very dangerous substance. It is poisonous and endothermic, and can be detonated by shock. It has a very low flashpoint and a very high vapour pressure. Mixed with air or oxygen it forms a violent explosive mixture which can be fired by flame or shock. Catalytic agents, such as iron rust, or even surfaces in the right physical condition, may start the reaction.

The Acts and Regulations relating to the discharge of materials into sewers or connecting drains are very numerous. Generally, no chemical or manufacturing refuse, or any substance dangerous to the health of persons entering the sewer or injurious to the structure of the sewer, may be discharged into the sewer.

There is not the least doubt that carbon disulphide is, within the meaning of these Acts, a dangerous substance. If any doubt did exist, it would be dispelled by the fact that competent authority has issued very stringent regulations under the Factory Acts, restricting the use of this substance on account of its poisonous and dangerous nature.

Since this accident all waste solvents have been saved and used for various cleaning operations and then gradually dispersed by evaporation. The staff has been instructed to burn all waste carbon disulphide every day.

Ammonia.—A student using a pipette, sucked some strong ammonia solution into his mouth and the vapour reached his lungs. This affected his respiration so that he could breathe *in* but not *out*. His face became blue and his chest super-expanded. A drink of weak citric acid solution had an instantaneous effect: the compressed air in his lungs was ejected and relief was immediate.—*Letter from a Fellow.*

Laboratory Emergency Chart.—The Fisher Scientific Company (711-723 Forbes Street, Pittsburg, Pennsylvania, U.S.A.) has recently issued a revised edition of its Laboratory Emergency Chart embodying the principles of first aid, prone pressure method of artificial respiration, emergency treatment for poisoning, burns and scalds, cuts, collapse, toxic headaches and electric shock.

The Chart will be distributed, free of charge to any *bona fide* laboratory, by the Company, in an endeavour to prevent suffering. With it is issued a schedule of materials for carrying out the directions indicated on the Chart.